



**Minutes from UNAVCO E&O Standing Committee Meeting  
October 26, 2007  
Boulder, Colorado**

**Attendees:** S. Eriksson, A. Matais, Bob Lillie, S. Anandakrishnan, E. Pettit, M. Hamburger, E. Hill, T. McKinney, S. Olds, A. Newman, K. Tallerday, H. Mayer, C. Schiffman, J. Margolin, J. Magliocca

**Joined Via Telecon:** J. Murray, J. Taber

**Not Present:** B. Tewksbury

**Action Items:**

- Andy Newman recommends that the committee put the plan forward for Board approval and not for further revisions by the Board.
- InSAR – talked to David Sandwell – possible workshop in the UNAVCO Short Course SEriksson
- Kate Tallerday will give B. Lillie more information on that workshop that she attended.
- UNAVCO asks that Committee members link to UNAVCO E&O from their own organizations or personal home pages. Kate T. will provide a sentence to send to the Committee members to link to the UNAVCO Website.
- Create a statement of common copyright to redistribute
- Committee to work with Susan on the RESESS Proposal
- The committee approved holding a 1pm-5pm Workshop on the Monday afternoon following the committee meeting.
- Develop Ideas for future directions. Each person assigned below will report with 1-2 paragraphs on each idea at next meeting with clear pros and cons of each idea. :
  - PBO Drill Cores – J. Margolin
    - If there is strong scientific interest in getting the core samples for data, have a mandate for the PBO Standing Committee. – But UNAVCO should get the credit for getting the samples.
    - People drilling holes should have a list of regional geologists that they should give their data.
  - Support for Grad Students/Teachers to National Science Meetings (other than UNAVCO). What are the expectations of the attendee/UNAVCO – A. Newman
  - Support for E&O Product Development – Bob Lillie
  - Provide access to the Spanish speaking community. Picking out different topics and translate into Spanish – Audi Matias

Mini short courses on-line – one day training course online. A complete teaching tool with no interactive component. Possibly have a seminar here, and have it broadcasted to watch it remotely. Have a preliminary webinar to prepare people for the courses. – E. Hill

**Welcome and Introduction**

Newman brought the meeting to order at 8:07am, welcomed the committee, requested a round robin introduction and reviewed the day's agenda. Michael Hamburger welcomed the committee and discussed the history of the E&O program and the transition of the new employees and committee.

**Approval of Minutes**

Discussed the Action Items from the last meeting and which ones have been completed. Minutes are approved by unanimous agreement.

This meeting was planned to educate a mostly new committee on the development and activities of the UNAVCO Education and Outreach Program. Michael Hamburger and Susan Eriksson discussed the development of the E&O strategic plan. Work by the E&O committee had formed and edited the plan over the past two years, but it has not been formally adopted by the UNAVCO Board of Directors. Eriksson explained the process which developed the plan, for example, the vision is incorporated into the first page of text and core values are incorporated into that text.

Core values – written into first page

- Integrating education with research



- Scientific accuracy
- Broadening participation
- Relation of science to society
  - Exciting and relevant
- Rigorously evaluated
- 

Strengths, weaknesses, opportunities and threats were analyzed during the two day strategic planning session by the first E&O Committee. The strategic plan is an overall document explaining the rationale of the program with strategic goals and Objectives to achieve those goals. How this plan is implemented is in a separate, more detailed documents, again under revision. The Implementation Plan addresses the resources (staff and \$) allocated to achieve the goals and is more fluid than the overall strategic plan as new projects are started and developed. The board did not act on the recommendation to approve the plan but will at the next telecon.

Discussed:

- How do the PI's get information for an E&O Component in their proposal
- How do we articulate that to the community? K. Tallerday and C. Shiffmann will be working on that.
- Possibly come up with a list of services to inform the community what we can/cannot do.

S. Eriksson and A. Newman would like to make sure that the committee is involved in the input of the E&O Portion of the UNAVCO Strategic Plan. S. Anandkrishnan recommends that the Committee accepts this plan as is and for it to be implemented into the overall UNAVCO Strategic Plan. Andy Newman recommends that the committee put the plan forward for Board approval and not for further revisions by the Board. The committee is in favor of approval.

## **E&O Program Overview**

Eriksson discussed the PBO Nucleus as it was the first, basic approach to building an E&O program: A description of the program, its goals, program plan, and resources were reviewed. (The details are given in the power point presentation handed out at the meeting).

Goals of the E&O portion of the Nucleus project.

1. Increase awareness
2. Create resources for E&O
  - Based on sound educational theory, research and practice
  - Included students collecting data and/or using authentic data
3. Evaluation of process and products

Eriksson discussed the external resources of funding for the Nucleus project:

\$305,000 total from NSF

- Full time E&O Staff – 3.5 years
- Travel funds for advisory committee - \$4,800/yr
- Participant Support – 10, 20, 20, - \$18-\$22k/yr
- Publication - \$3,000/yr
- External Evaluation of program - \$4,000/yr

In Kind from UNAVCO

- 25% Salary for S. Eriksson
- Web development and support

Eriksson reviewed the UNAVCO E&O Goals

- Increase the understanding and public appreciation of geodynamics and earth deformation processes and their relevance to society.
- Broaden the use of UNAVCO data and products by a wide audience of educational and research users.
- Increase the diversity and broader participation in geoscience education and research.
- Build a sustainable community of UNAVCO scientists and educators engaged in education and outreach.
- Collaborate with other organizations to provide systemic impact on geoscience education.



The E&O program can be described as some general programs which include: Professional Development

- Short Course Series
- Field Courses
- Teachers/Faculty in Residence

### **Sustainability of funding for E&O**

The E&O program is funded through multiple funding streams. The E&O Director (15% from EarthScope), the Outreach Specialist, and one UNAVCO E&O specialist are funded primarily through Headquarters. One person is totally funded by a community grant (PBO Nucleus). PBO is paying for one siting outreach person and EarthScope has funded one person. The latter two positions are short term through parts of 2008.

### **E&O Staff**

Director- S. Eriksson

Curriculum and Professional Development – S. Olds and H. Mayer

UNAVCO and E&O Website – S. Olds and K. Tallerday

PBO Siting – J. Margolin

EarthScope – C. Schiffman

Outreach – K. Tallerday

Admin Support – J. Magliocca

A one-page chart was discussed showing the various major initiatives of the program.

- Measurable work plan for UNAVCO E&O
- Discussed the Implementation Graph and how each staff person has a part in the overall project.
- Pie chart of each resources and funding is behind each project.

### **Some of the interesting upcoming tasks/projects**

- “Teaching Geophysics in the 21<sup>st</sup> Century”
  - Chapter in Journal of Geoscience Education
- GEO Centers Workshop
- M. Liu and others, China PIRE Grant
  - Teacher, prof. dev. and diversity in undergrad 2009
- “Active Earth” Earthscope and Polar
- POLENET E&O Collaborative work
- Media/Journalism
- UNAVCO Short Course Series – community input
  - Advertise outside of the UNAVCO Community
  - Target Audiences - Grad students and researchers
- UNAVCO web reorganization/content
- NSF E&O Program evaluation – start late 2008
- Geodetic Network in Puerto Rico - Wang

### **Next Five Years**

- Widespread appreciation for space geodesy
- UNAVCO is a recognized name in the geo-education
- Widespread use of high-quality curricular materials
- Increasing breadth and depth of impact
- Measurable impact on the diversity of our scientific community
- Successful partnerships
- Leadership role in polar science education and outreach.

**Department Reports were presented by various E&O staff. Please see the notebooks for details of these reports.**

Discussion on Materials and Professional Development:



Curriculum, GLOBE program, Handheld GPS, what's it about, how does it work and the science you can do with it. Is there a mechanism for the colleges to request information? There was a suggestion to develop a pamphlet on how GPS works, how it's used and possible lab exercises. S. Eriksson comment: the pamphlet has been done and exercises are in the testing phase. Of course, more exercises are part of the program development.

Create a common copyright to redistribute. Possibly prepare a pamphlet that comes out of the textbook and that could be distributed freely..

**A New project is to repurpose the content of UNAVCO.org. We are doing this to:**

- Elevate the visibility of UNAVCO projects and community science (such as Polar, INSAR, etc)
- Spotlight the connections from UNAVCO (an community) projects to UNAVCO services (such as data archives, equipment, campaign personnel)
- Provide current and up-to-date information about UNAVCO projects and services.

First Tasks for late 2007 and early 2008 are to:

- Identify and create asset map
- Identify major science areas, project/programs to focus on main page
- Identify who has responsibility for each page/area on the UNAVCO website
- Update processes mechanisms to add/maintain/update web content
- Create mainpage mock ups and share with key personnel
- Interim update to main page to link major science areas/projects/programs

Discussion:

Discussed Timeline

Exploring other technologies to disseminate content on the internet such as RSS, podcasts, you-tube, Café Scientific  
The committee looked at Jenda Johnson's animations.

**Jules Verne Voyager – S. Olds, C. Meertens and A. Newman**

Chuck Meertens joined the meeting to discuss some of the history and current status of the Jules Verne Voyager and some of the educational editions. UNAVCO has developed a new JVV interface which is being updated. Web Stats graph indicate that JVV is being heavily used. UNAVCO is watching as new technology emerges, particularly Google Earth, and the organization is thinking about the future of JVV in light of new technology. We are at a transitional time between the program running JVV and newer technologies which do not have the capability of doing much of what JVV can do now.

A. Newman had sent out a survey to some of his students and discussed the results:

Extremely long comments. They did not look at Jr. at all – Jr. seems to work very well. The focus is on JVV and the results for the user interface of Voyager 2 is in blue.

Overall User Experience: 2.6 – 3.4

Value of information being represented: 4.4 – 4.7

Organization: 2.3- 4.3

Clarity of Use: 2.4 – 3.7

Speed of use: 2.0 – 1.7

Perceived utility of toolset if response was more rapid: 4.4 – 4.7

1 – Poor not worth my time

2 – Needs improvement. Problematic, but potentially useful

3 – Alright, Potentially useful, but not great

4 – Good but could use some work

5 – Great!

Discussion:

Abandoned the use for archive – using Google.

Let UNAVCO explore how far we can go with Google to do the same thing.

Discussed Jr.



Discussed Google earth's costs  
Some schools cannot download applications  
Discussed the data  
Discussed the linkage to educational material (did you know)  
E&O needs to be developed into the tool development within UNAVCO. (Google Earth)  
Discussed IDV – more than geographical representations – a little complicated to use.  
Discussed Google Earth as a very powerful educational tool.

**Advise of the Committee to UNAVCO is to make sure E&O is considered when working with Data sets.**

### **Sridhar Issues with Polar E&O – E. Pettit and S. Anadkrishnan**

1. We should increase Outreach to researchers and scientists of the polar community who might not know what UNAVCO does... and might not be able to use the facilities effectively. In particular, classes on processing the data.
2. Tools – High time res. GPS (10 sec.) – provide a workshop in high-rate GPS. Glaciers move rapidly enough that averaging over a day is dangerous and hides valuable information. However, traditional processing techniques (developed for nearly-stationary antennas) can't be used for short-time high-rate processing.
3. Matt King, Newcastle would be a good short course leader

Discussion:

**InSAR – talked to David Sandwell – possible workshop in the UNAVCO Short Course SEriksson**  
Native Communities - Erosion, permafrost changes – deformation  
Have a PBO like station on a glacier solely for educational purposes (called an E&O Site)  
Jim Davis had suggested a lecture on space geodesy and the breadth of tools used.

### **PBO Siting Outreach – Jayme Margolin**

Discussions: Expand to active data technologies. GPS and PDA's.

***Chair A. Newman concluded the meeting at 12:17pm and brought the meeting back to order at 1:20pm***

### **EarthScope National Office (ENO)**

Bob Lillie from the EarthScope National Office gave an overview of the goals of the ENO and talked about

- interpretive workshops planned for 2008 and beyond.
- EarthScope speakers series
- Collaborative work with UNAVCO and IRIS E&O

EarthScope Workshops for Interpretive Professionals in Park and Museums

1. Cascadia Subduction Zone, Mt. Rainer National Park, April 7-10, 2008
2. Sierra Nevada, Yosemite National Park, Sept. 2008
3. San Andreas
4. Yellowstone Hotspot

Formal educators will be participants in these workshops.

***John Taber joined the call at 1:35pm***

### **IRIS**

John Taber discussed IRIS E&O and where we collaborate. For RESESS, IRIS helps with funding and finding mentors. UNAVCO is partnering on the Active Earth Display. What is the current status of UNAVCO's development of AED tools?

- Realtime display
- Content on a touch-screen on kiosk mode
- Customizable
- Museum and universities or visitors center
- Have the engine, have the seismic content



- Develop content related to EarthScope by 2/08 for Cascadia (Bob's workshop)

S. Eriksson and H. Hamburger commented on their appreciation of the collaboration with IRIS in order to reach different audiences and being able to achieve a lot more than what could be done individually.

Discussion on Outreach (Kate Tallerday):

Kate attended the annual meeting of ASTC (Association of Science and Technology Centers) and attended a session on taking science and turning into a story.

**Kate will give B. Lillie more information on that workshop that she attended.**

**UNAVCO asks that Committee members link to UNAVCO E&O from their own organizations or personal home pages. Kate will provide a sentence to send to the Committee members to link to the UNAVCO Website.**

T. McKinney acknowledged the importance of Marketing.

### **Media Relations Implementation Plan – C. Schiffman**

Discussion:

Who gets credit? **(Who knows what this comment was about?)**

Bob Lillie discussed an EarthScope news conference at AGU. Other possible upcoming activities include SAFOD Drilling/Coring the Andreas Fault and installing the 100<sup>th</sup> Station in Alaska.

Schiffman discussed how UNAVCO can educate the PI's on how to redirect the media to UNAVCO for information.

**RESESS** – S. Eriksson discussed the current status of Research Experience in Solid Earth Science for Students (RESESS) and most of the discussion revolved around the upcoming 2008 proposal to continue funding for the period of 2009-2013. She asked for a Subcommittee to work on the RESESS Proposal:

**Action Item: Committee to work with Susan on the RESESS Proposal**

Community Involvement on Proposal

*Will discuss more of RESESS at the end of the meeting in the context of the 2008 UNAVCO Science Workshop. .*

### **Overview of Evaluation**

S. Eriksson pointed to the UNAVCO E&O Website where Evaluation plans and documents are posted.

### **Financial and Budget Update**

Eriksson discussed where the funding comes from and presented graphs and a spread sheet of various projects funding E&O. She explained what funding was part of the new Cooperative Agreement for UNAVCO

### **2008-2012: Participant Support:**

- Years 1,3,5 – fund will cover the Science Workshop
- Funds from years 2, 4 to cover 5 years for:
  - Community input through Facility and E&O SC.
  - Short Course Series – instructor travel plus student scholarships
  - Institutional Support for RESESS
  - Expert input to program development
    - Master Teacher in residence
    - Faculty in residence
  - UNAVCO Business Meeting

Discussed the Budget page, read down the rows and discussed the projects.

How to spend the surplus budgets – support students to attend workshops. Eventually we will move to a report where we can see what more is being spent in each project.



Need to decide how to spend the additional money. Send 5 Grad students to AGU this year or regional GSA meetings...and send a report back to UNAVCO. AGU lacks an undergrad presence

Have a system for mentoring

Use the funds to advance the goals – Teacher in residence program? Add another student.

**Eriksson explained that although there is money in several accounts, it is not ‘surplus’ and is designated for specific work.**

#### **Future Plans for UNAVCO E&O program:**

Each person that is assigned will develop the idea (a couple of paragraphs) and will present at the next meeting in Spring 08. Clear thinking on pros/cons of the plan.

- PBO Drill Cores – J. Margolin
  - If there is strong scientific interest in getting the core samples for data, have a mandate for the PBO Standing Committee. – But UNAVCO should get the credit for getting the samples.
  - People drilling holes should have a list of regional geologists that they should give their data.
- Support for Grad Students/Teachers to National Meetings (Non-UNAVCO) Expectations – A. Newman
- Support for E&O Product Development – Bob Lillie
- Provide access to the Spanish speaking community. Picking out different topics and translate into Spanish – Audi Matias
- Mini short courses on-line – one day training course online. A complete teaching tool with no interactive component. Possibly have a seminar here, and have it broadcasted to watch it remotely. Have a preliminary webinar to prepare people for the courses. – E. Hill

Additional short courses:

- Communicating with Media.
- Visualization – JVV or Google map – olds
- 21<sup>st</sup> Century skills and equity – Tiah
- Lesson plans online – Template for hazards

Eriksson proposed a few topics for Special Interest Groups (SIGS) for the 2008 UNAVCO Science Workshop in March.

- Working group for RESESS Proposal
- Interpretation for geoscientists
- Inquiry in teaching geophysics
- “Mini” teaching geophysics in the 21<sup>st</sup> century Shimon Wdowinski, Seth Stein

Eriksson asked for names to present to the Science Workshop committee for Outreach talks in Plenary Sessions at workshop. Names suggested by the committee included.

Polar

- Erin Pettit

Hazards

- Evan Ford, NOAA
- Geo hazards International – UNICEF

Seismic Cycle

- Marino Protti
- Ross Stein
- Bob Butler
- Kerry Seih

Magmatic Systems

- Bob Lillie
- Bob Smith

**Discussed the next Committee Meeting and Mini Courses:**



The committee decided to come in Sunday night (March 9) with a group dinner and meet on Monday morning half day meeting (March 10). The committee approved holding a 1pm-5pm Workshop on the Monday afternoon following

Other discussion on SIGS and UNAVCO Short Course Series workshops:

- Mini-teaching geophysics in 21st century, a course will be taught by faculty/ scientists - organized by E&O staff
- Bob Lillie : interpretation for scientists
- Incorporating internships into PI budgets and how to get the supplements (Note: this was done in 2006)
- Working group on RESESS
- Best practices for successful internships for underrepresented students (Note: this was done in 2005)
- Inquiry in teaching geophysics
- J. Murray's ideas for workshops and short courses:
  - high rate GPS... from some stations
  - (GPS) properly understanding the errors in data - time series w/ w/o different functions..stochastic processes and common filtering
  - InSAR workshop taught in Boulder.
  -

*Chair A. Newman concluded the meeting at 5:19pm.*